AX-1814 Seat No._____

B. Sc. (Sem. IV) Examination

March / April - 2018

Biotechnology : Paper - 5

(CC-I-5 : Cellular Metabolism - II)

Time : 3 Hours] [Total Marks : 70

1 MCQ/Short answer type : 15

(1) Which of the following contributes to second amino group of urea molecule?

(A) Glutamic acid

(B) Glutamine

(C) Aspartate

(D) Succinic acid

(2) Beta oxidation is catabolic pathway for

(A) Saturated fatty acid

(B) Unsaturated fatty acid

(C) Glycerol

(D) Steroid molecule

(3) Which of the following is not a limiting factor for photosynthesis under normal environmental condition?

(A) Light

(B) Water

(C) Carbon dioxide concentration

(D) None

(4) Which of the following statement is possible supportive explanation of abundance of RUBISCO in biosphere?

(A) Its catalytic efficiency is low which is compensated by production of higher amount of enzyme.

(B) It's only found in eukaryotes.

(C) It's only produced by prokaryotes.

(D) Its presence is restricted to photosynthetic organisms.

(5) What makes ubiquinone an ideal electron carrier through membrane?

(A) Small size.

(B) Hydrophobic nature.

(C) Lipid solubility

(D) All

(6) During fatty acid biosynthesis _____ molecule is incorporated in growing fatty acid chain.

(A) Acetyl Co A

(B) Malanoyl Co A

(C) Glycerol

(D) Carbon dioxide

(7) Read the list of following enzymes

1. Adenyl succinate synthase
2. IMP dehydroenase
3. XMP- Glutamine aminotransferase

Select appropriate option for involvement of these enzymes.

(A) Adenine biosynthesis.

(B) Guanine biosynthesis.

(C) Urasil biosynthesis

(D) (A) and (B) both

(8) Why light is essential for electron flow in photosynthesis ?

(A) Because transfer of electron from donor to first election acceptor is uphill with respect to redox potential.

(B) Because transfer of electron from donor to first election acceptor is down hill with respect to redox potential.

(C) Light provides heat energy very important for activation of electron carriers.

(D) There is no specific explanation behind this just being light reaction light is essential.

(9) In transamiation reactions _____ amino acid functions as amino group donor.

(A) Glutamic acid

(B) Alpha keto glutarate

(C) Pyruvate

(D) Alanine

(10) What is an essential amino acid for human body?

(A) Biosynthesis of this amino acid is not necessary

(B) Biosynthesis of this amino acid is not possible in human body.

(C) Biosynthesis of this amino acid is possible in human body.

(D) Its presence in protein is essential for functions of protein.

(11) Which protein complex serves both in TCA cycle and Electron Transport System?

(12) What is location of fatty acid synthesis in eukaryotic cell?

(13) How many nitrogen atoms are present in ring of purine type of nitrogen base?

(14) Which organelles are involved in photorespiration pathway?

(15) What is location of Electron Transport System in bacteria?

2 Write short notes on any **five** : 25

(1) Q cycle of mitochondrial ETS.

(2) Pyrimidine biosynthesis.

(3) Catabolism of fatty acid.

(4) Deamination of amino acids.

(5) Facilitated diffusion across membrane.

(6) NADH-ubiquinone oxidoreductase complex.

(7) Z scheme of electron transfer in plant during light reaction.

3 Give a detailed account on any **three** : 30

(1) Calvin cycle for biosynthesis of carbohydrates.

(2) Fatty acid biosynthesis.

(3) Chemo osmotic theory and ATP synthesis.

(4) Signal transduction pathway induced by Insulin

(5) Which is major nitrogenous excretory product in human body? Describe its biochemical synthetic pathway.